

Cognitive aspects of reading

The Psychology of Reading. By Eleanor J. Gibson and Harry Levin. Pp. xii+630. (MIT: Reading, Massachusetts and London, 1975.) \$18.95.

THE republication of Huey's *Psychology and Pedagogy of Reading* after sixty years of general reticence on the topic has been accompanied by a rush of modern treatments. This rebirth of interest in reading reflects not only the cunning propensity of psychology for crop rotation but also an increasing interest of cognitive psychologists in skilled and intelligent performance. At the same time social concern about literacy, especially in the US, has enabled the psychologist, like a modern Danaë, to be possessed by Zeus in a shower of research funds. This volume by Gibson and Levin presents the most comprehensive engagement to date of cognitive psychology with the problem of reading.

The book consists of three sections, the first of which reviews the basic psychological and linguistic principles which the authors believe relevant. These include perceptual learning, work on general, cognitive and especially language development, basic linguistics and some specialised material on writing systems, and finally, a discussion of the considerable literature on the visual perception of words.

It is this extensive review section which sets the book apart and, in a sense, exhibits its academic credentials. The result is not entirely satisfactory. One problem is that the survey has something of the texture of 'annual review' articles, dense and impressively referenced but somehow lacking in coherence. The mass of data is insufficiently organised to be readily digested by the non-psychologist or to provide new insight for the specialist. Significantly, the introductory chapters on linguistics and writing systems are much more readable than those reviewing areas of experimental psychology. There are some obscurities, such as the curious description of Spoehr and Smith's research on pages 91-92 and the seemingly contradictory claims about the effect of orthographic regularity on letter search. But on the whole the text is dry and lucid.

The treatment of underlying concepts is lengthy yet some judgements have been made about exclusion of material. Notable absences include vision research such as metacontrast, much of the post-Sperling work on letter array processing and the important work of Meyer on lexical deci-

sions. There is also little explicit treatment of general problems of pattern recognition.

The core of the book is the section on the reading process itself. This is rather more readable, not least because the view of basic questions is less obscured by an untidy forest of experimental data. This section should also prove fruitful to the non-specialist. It concludes with a review of models of skilled reading, which brings the discussion back to the preoccupations of experimental psychology. Here, in an attempt to invent some substantive issues the authors create a curious opposition of 'information processing' and 'analysis-by-synthesis' models. This chapter also contains one of the occasional lapses into slightly partial reviewing, where (page 467) the claims of Gibson and her colleagues about an absence of acoustic or semantic effects on visual search are presented without

mention of conflicting evidence.

The final section consists of short capsules for such questions as dyslexia and speed reading. Of these the freshest and most absorbing is on cross-language differences in reading achievement. Here is set out the baffling lack of well established relationship between reading development and the vastly different forms of orthography. This is almost enough to terminate the cognitive psychologist's flirtation with the real world. One echoes the words of a recent article title: "Do not adjust your mind, there is a fault in reality."

Huey's classic book is a more provocative essay on reading and the recent experimental literature is more penetratingly treated elsewhere, but Gibson and Levin have produced a scholarly and comprehensive textbook. Like boxed sets of symphonies there is a simple virtue in completeness.

Leslie Henderson

Life gaining ground

Surtsey: Evolution of Life on a Volcanic Island. By Sturla Fridriksson. Pp. 198. (Butterworth: London, 1975.) £5.00.

ON November 14, 1963, a submarine volcanic eruption began in the ocean south of the Westman Islands off the coast of Iceland, which eventually resulted in the production of an island with an area of 2.5 square kilometres. The island was aptly named Surtsey, after the mythical Norse fire-giant, Surtur the Black. The geological significance of this rare event was immediately apparent, but the biological opportunities presented by the occurrence are of no lesser importance. These were fortunately recognised by men such as Sturla Fridriksson, who visited the island within six months of its formation and began the formidable task of documenting the establishment of living organisms.

The succession of life on totally bare areas of land surface has not been studied intensively, mainly because of the lack of opportunity, especially in isolated situations where invasion demands very effective dispersal on the part of the organism concerned. Students must surely be weary of the much repeated but rather fragmentary information available from Krakatoa following its eruption in 1883. But in this new book, Fridriksson has summarised the development of living communities of organisms and simple ecosystems in the 10 years since the formation of Surtsey.

The study is extensive. It documents the establishment of microbial life within months of the initial eruption,

and the arrival of the first invertebrate terrestrial animals, birds and viable seeds. Complete lists of plant invaders (including bryophytes) are given, with details of when they arrived. Bird life is also covered in detail, the book largely being concerned with visiting species, but also recording with some pride the establishment of breeding pairs of fulmar and black guillemot. Arthropods are dealt with in less detail; 158 species have now been recorded, but many of these could have failed to establish themselves as permanent inhabitants.

The chapter on "Ways of Dispersal" is particularly interesting in that it deals with mechanisms by which dispersal (mainly botanical) has been effected. Some species, such as *Senecio vulgaris* and *Eriophorum scheuchzeri* have been observed during invasion by air-borne seeds. A surprising list is given of seeds found attached to the egg cases of skate and washed up on the island; many grasses arrived in that manner. Some seed eating birds (snow buntings) were found to have viable seeds in their gizzards, which could potentially provide an invasion mechanism.

Finally, the developing biota of Surtsey is compared with neighbouring islands and the mainland of Iceland, and naturally these seem to provide the major source areas for invaders.

The book is well illustrated with some spectacular colour photographs as well as a large number of line drawings and maps. It is written in a lively, informal manner, which effectively conveys Fridriksson's vigour and his enthusiastic concern to observe the ecological development of a truly pristine habitat.

P. D. Moore